In re Patent Application of:
MCGETTIGAN ET AL.
Serial No. **10/785,589**
Filed: **02/23/2004**

REMARKS

Claims 1-20 are in this case as originally submitted.

Claims 1,2,4,5,11,12,14,15 and 17-20 are rejected under 35 USC 102(a) as anticipated by Seiberle.

Claims 3,10,13 and 16 are rejected under 35 USC 103(a) as obvious in view of Seiberle.

Claims 6-9 are rejected under 35 USC 103(a) as obvious in view of Seiberle and Daishinku Corp.

The serial no. of the co-pending application referenced in paragraph [0001] of the specification has been supplied. Reconsideration of this application in light of the foregoing amendments and following remarks is respectfully requested.

Before disarming the shortcomings of the rejections advanced in the outstanding Office Action, the present invention will be briefly reviewed, in order that patentable differences between the prior art and the invention set forth in Claims 1-20 may be more readily appreciated.

The present invention relates to anti-aliasing filters, also called blur filters, for digital imaging devices. The anti-aliasing filter is comprised of one or more DRP (double refraction plate) formed of a birefringent material having its optical axes arranged such that an incoming light is separated through the DRP into an o-ray and an e-ray of orthogonal polarizations. The anti-aliasing filter is used to prevent

higher frequency image components (higher than the device pixel spacing) from reaching the photodetector array. The filter is used for example, in digital cameras, camphones, and video recorders.

A prior art anti-aliasing filter is formed of birefringent crystal plates. Their thickness is determined by the birefringence of the material and the separation of the pixels. DRPs of quartz are relatively thick and heavy, which is undesirable for compact, portable imaging devices. Manufacture of such filters is also expensive.

Applicants have found that a construction of LPP/LCP birefringent polymer offered from Rolic Technologies, Ltd. can be used to create anti-aliasing filters 1/10 the thickness of the prior art economically.

It is alleged in the Office Action that the anti-aliasing filter as claimed is anticipated by Seiberle et al. of Rolic Technologies Ltd. in an article entitled "Photo-Aligned Anisotropic Optical Thin Films." On close inspection it is apparent that Seiberle et al. do not disclose or suggest an anti-aliasing filter or a DRP construction from the LPP/LCP material. Suggested constructions proposed by Seiberle et al. are directed to enhanced viewing angles for TN-LCD display films. The structures and examples disclosed by Seiberle et al. are all directed to polarizers or retarders, which change the polarization state of the incoming light, but do not separate component polarizations.

In particular, with respect to claim 1, Seiberle et al. do not disclose an anti-aliasing filter. Seiberle et al. do not disclose a first double-refraction plate ... having a thickness selected so as to provide a selected separation of ordinary and extraordinary light rays. A DRP, as discussed in the present application, comprises a birefringent plate having its crystalline orientation at an angle to the plate surface. Typically that angle is 45 degrees to optimize the thin structure. No birefringent plates for separation of polarization states are suggested in the Seiberle et al. reference. Figure 5 of the Seiberle reference, the only example where the optical axis is not parallel to the surface of the material layers, shows multiple different tilt angles of the optical axis. "Retarders with tilted optical axis (o-plate) allow to compensate for the residual off-axis retardation of TN-LCDs, thus enhancing the viewing angle range." This is not a DRP. Claim 1 cannot be anticipated by a reference that does not disclose the claimed elements. Accordingly dependent claims 2,4,5,11,12,14,15 and 17-20 cannot be anticipated for the same reasons.

Claim 11 has been rejected in view of Fig. 9 of Seiberle, which illustrates a retarder. In Seiberle, Fig. 9, two patterned retarders are arranged between crossed polarizers. None of these layers has an optical axis at an angle to the layer surface. This structure does not separate polarization states. No DRPs are shown.

Claim 12, incorporating the limitations of claim 11 discussed above, is further rejected in view of the disclosure at Fig. 6 of Seiberle. However, Fig. 6 of Seiberle is a

measured contrast conoscope of a TN LCD display film with a wide viewing angle. The structure claimed in claim 11 is not disclosed, nor is the condition that the "retarder plate and the second DRP are selected so as to provide a two-dimensional anti-aliasing filter for at least one color of light" as defined in claim 12. The elements of claim 12 are simply not present in the Seiberle reference.

Claim 20 is directed to a package containing a photodetector array and supporting the anti-aliasing filter. Claim 20 has been rejected in view of the experimental data of Seiberle disclosing structures for TN LCD display films. No package is disclosed, nor is the combination of photodetector and the anti-aliasing filter of claim 1.

None of the claims can be considered anticipated by Seiberle et al. as essential elements of all of the claims are not disclosed.

Claims 3, 10, 13, and 16 are rejected as obvious in view of Seiberle. It is argued in the Office Action that "Seiberle teaches the invention as claimed and suggests that the materials used for the LPP and LCP in the anti-aliasing filter can be chosen to provide any desired results." As discussed above, Seiberle does not disclose any anti-aliasing filter. Seiberle also does not promise to provide any desired results. Seiberle states, "the process compatibility with flexible substrates and the possibility to adjust the optical axis to any azimuthal and polar angle makes it ideal for large volume roll-to-roll production of retarders and wide view films for LCDs. Stacking of LCP layers with individual optical

functionality leads to compact films with new optical features." The positive teaching is limited to LCD display film. And such a vague suggestion of providing "new optical features" cannot be said to be a suggestion to produce anti-aliasing filters. The claimed structures of claims 13 and 16, as well as the basic structure of claim 1 from which all rejected claims depend, cannot be obvious in view of the teaching of Seiberle.

Claims 6-9 are rejected as obvious in view of Seiberle in combination with Daishinku Corp. "Optical Low Pass Filters." The Daishinku Corp. reference is a specification for low pass filters comprising one or two double refraction plates formed of quartz, as known in the prior art. Claim 6 defines an anti-aliasing filter having a thickness between 10 and 150 microns. The Daishinku Corp. specifications give a minimum thickness of at least 280 microns (.28mm) for a single quartz layer. Thus, a significant advantage of the present invention is demonstrated. The disclosure of Daishinku Corp is only related to quartz/glass constructions. There is no suggestion in either Daishinku or Seiberle to combine the teaching of these references apart from hindsight in view of the present application.

In view of the foregoing remarks, it is respectfully submitted that the instant application is in condition for allowance.

Applicants request confirmation of consideration of the IDS previously mailed to the U.S. Patent and Trademark Office on July 27, 2005.

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Early and favorable reconsideration of the Examiner's objections would be appreciated.

Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 50-1465 and please credit any excess fees to such deposit account.

Respectfully submitted,

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CERTIFICATE OF FACSIMILE TRANSMISSION

I HEREBY CERTIFY that the foregoing correspondence has been forwarded via facsimile number **571-273-8300** to the COMMISSIONER FOR PATENTS, this 17 day of October 2005.